



TWO HEADS ARE BETTER—A two-headed midget rocket motor that fires simultaneously from both ends has been developed to test new rocket nozzle designs and materials by the United Technology Corporation's Development Laboratory in Sunnyvale, Calif. The rocket motor has a single combustion chamber for its two nozzles. It is designated a "Janus" test motor, after the ancient double-headed Roman god of gates and doors.

INVENTION

Patents of the Week

A stair-climbing wheel chair, a method of analyzing the size or number of blood cells and an airplane that rises straight up from the ground were granted patents.

► **STAIRS** and curbs will be no obstacle to wheel chair occupants with a new 16-wheeled vehicle that climbs stairs or runs on flat floors with equal ease, driven by the passenger alone. The stair-climbing wheel chair won patent 3,049,364 for Eugene O. Clay of Los Angeles.

The chair runs on eight pairs of small rubber wheels, four pairs on each side, driven by a chain from the hand wheels connecting the wheels on either side. A supporting frame allows the chair occupant to raise or lower each set of wheels for ascending or descending stair steps without the aid of an attendant. The seat remains upright at all times for comfort and an automatic brake locks the chair when the occupant releases his grip, preventing stairway accidents.

Wheel chair patients can mount or descend nearly any step in the forward motion, and the automatic brake can be released so the chair can be pushed in the normal fashion.

Method of Analyzing Blood

Measuring microscopic particles is perhaps one of the most difficult tasks a laboratory technician could have. A new method for analyzing the size or number of cells in blood and other minute substances won patent 3,049,047 for three researchers at the American Optical Company in Southbridge, Mass.

Drs. Michael L. Polanyi, Webster, Mass., and James E. Johnston, Southbridge, Mass., and Morden G. Brown, Woodstock, Conn., believe their patent will relieve much of the

work of measuring the many physical properties of a blood sample. The common practice, Dr. Brown told **SCIENCE SERVICE**, for diagnosing blood diseases such as anemia is subject to many human errors in at least three or five of the readings necessary. Hemoglobin, blood count and other readings require several estimates and cross-estimates.

Vertically Rising Airplane

An airplane that rises straight up from the ground and then flies normally won patent 3,049,320 for Charles J. Fletcher of Sparta, N. J.

The vertical-take-off-and-landing craft (VTOL) has a giant, U-shaped fuselage that allows the huge ducted propeller to turn 90 degrees, facing either the ground or the rear, thus powering the craft upward or forward. The assembly resembles a fan which pivots between two upright pegs. The pilot and passengers do not rotate when the propeller pivots. VTOL is useful in underdeveloped areas where landing space is at a premium.

Other Significant Patents

Housewives will no longer "test" paint sprays and aerosol bomb shoe polishes and other products in the grocery store when patent 3,049,263 is marketed. Sigmund E. Edelstone, Chicago, and Manley K. Hardison, Glenview, Ill., assigned a lock for aerosol can tops to the Spra-Lok Corporation of Chicago. The cap lock prevents

tampering with goods before purchase and is easily disposable.

Two marine weapons also received patents. A torpedo which guides on the wake of a ship, correcting and redirecting itself until it follows the target, received patent 3,049,087, assigned to the Government through the Secretary of the Navy by Charles P. Conley and Arthur Nelkin of Pittsburgh. Howard J. Stark of Arlington, Va., won patent 3,049,454 for an explosive foam which is lighter than water. The foam can be packed on the top of a torpedo or mine or along the outside of a dummied ship to keep them upright while moving toward a target.

An automatic brake which stops an automobile when the driver falls asleep and releases the hand lever was awarded patent 3,049,188. Anthony Giannetti, Paterson, N. J., explained that the invention can control several functions of the car but its most valuable asset is the application of brakes and turning off the engine when the driver becomes drowsy.

The U. S. Government was awarded rights to a computer patented by Cyrus Beck, head of the Automatic Controls Branch of the Naval Air Center, Abington, Pa. Patent 3,049,299 can be used to compute the rapidly changing positions of an aircraft, the wind velocities and other factors which are necessary for the plane to navigate on a great circle, the shortest distance between two points on the globe.

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TECHNOLOGY

Solve Mystery of Speech By Mechanical Means

► **THE PROBLEMS** of human speech and the mystery of how one person understands another may be solved by mechanical means.

Trainable machines could in the future be made to tell what characteristics of sound make understandable speech. This is not now known.

Dr. Bernard Widrow of the Stanford University Electronics Laboratories told **SCIENCE SERVICE** that the discovery of the components necessary for understanding speech would be of great help to persons who have speech difficulties.

When the mechanisms of communication by speech are found, it will be possible to build machines recognizing spoken words. Madaline I is a machine that has been trained to recognize ten words with 99% accuracy.

Dr. Widrow said he expects Madaline, tested and improved during the last year in the Laboratories, by this time next year to be able to recognize hundreds of words. However, machines in the future may someday be almost as good as humans in speech perception.

Computer experts and the telephone companies are very much interested in the development of such machines, Dr. Widrow said. With it, computers could be programmed by voice instead of by manual instruction, and telephone numbers could be reached merely by asking for them.

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